



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/834,505	04/13/2001	Shau-Lin F. Chen	4424/4526	5807

7590

01/09/2003

Chief Patent Counsel  
Engelhard Corporation  
101 Wood Avenue  
P.O. Box 770  
Iselin, NJ 08830-0770

EXAMINER

VANOY, TIMOTHY C

ART UNIT

PAPER NUMBER

1754

9

DATE MAILED: 01/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09-834,505

Applicant(s)

CHEN

Examiner

VANOT

Group Art Unit

1754

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

☒ Responsive to THE PRELIMINARY AMENDMENT FAXED ON NOV. 26, 2002 communication(s) filed on \_\_\_\_\_

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

☒ Claim(s) 1, 2, 5, 7, 8, 9, 20, 21, 29, 34, 39-42, 48, 106 AND 109 is/are pending in the application.

Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☒ Claim(s) 60, 62 AND 63 is/are allowed.

☒ Claim(s) 1, 2, 5, 7, 8, 9, 20, 21, 29, 34, 39-42, 48, 106 AND 109 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

## Application Papers

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner

☒ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some\* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_

☐ Copies of the certified copies of the priority documents have been received

in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4 & 8

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other \_\_\_\_\_

Office Action Summary

**DETAILED ACTION**

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-73 and 106-118 (group I), drawn to a catalyst and method for making the same, classified in class 502, subclass 325+.
- II. Claims 74-105 (group II), drawn to a method, classified in class 423, subclass 213.2+.

The inventions are distinct, each from the other, because the inventions set forth in claims 1-73 and 106-118 (group I) and claims 74-105 (group II) are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the product, as claimed, can be used for another and materially different process, such as a method for removing hydrogen sulfide out of a gas.

Because these inventions are distinct for the reasons given above and the inventions set forth in groups I and II have acquired a separate status in the art as shown by their different classification; the inventions set forth in groups I and II have acquired a separate status in the art because of their recognized divergent subject matter, and the search required for any selected group of claims is not required for the

Art Unit: 1754

other, non-selected group of claims, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. Richard Negin, Applicant's Attorney, on Nov. 1, 2002 a provisional election was made with traverse to prosecute the invention of the catalyst and method for making the same, claims 1-73 and 106-118 (group I).

**Affirmation of this election must be made by the Applicant in his reply to this Office Action.** Claims 74-105 (group II) are withdrawn from further consideration by the Examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Specification***

- a) On pg. 6 ln. 28 in the specification, it appears that "JP" is misspelled.
- b) The abstract is objected to because it does not provide any examples of the "sulfur oxide absorbing layer", "nitrogen oxide absorbing layer" or the "SO<sub>x</sub> sorbent component".

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 109 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

Art Unit: 1754

a) The terms "finely divided" and "high surface area" in claim 109 are relative terms which renders the claim indefinite. The terms "finely divided" and "high surface area" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

Art Unit: 1754

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having "ordinary skill in the art" has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

Claims 1, 2, 5, 7, 8, 9, 20, 21, 29, 34, 39, 40, 41, 42, 48, 106 and 109 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U. S. Pat. 5,597,771.

The abstract (and claims) of U. S. Pat. 5,597,771 reports a catalyst, comprising:  
a 1<sup>st</sup> layer comprising:

- 0.15 to 2.0 g/in<sup>3</sup> (about 259 to 3,456 g/ft<sup>3</sup>) of a 1<sup>st</sup> support (which may be silica, alumina or titania: please also see claims 2 and 19);
- 0.003 to 0.6 g/in<sup>3</sup> (about 5.2 to 1,037 g/ft<sup>3</sup>) of a 1<sup>st</sup> palladium component (please also see claim 19);
- at least about 0.05 g/in<sup>3</sup> (86.4 g/ft<sup>3</sup>) of an oxygen storage component (which may be ceria or a praseodymium compound: please also see claims 7, 8 and 19);
- (optionally) 0 to 0.065 g/in<sup>3</sup> (0 to 112 g/ft<sup>3</sup>) of another 1<sup>st</sup> platinum group component (please also see claim 19);
- 0.025 to 0.5 g/in<sup>3</sup> (43.2 to 864 g/ft<sup>3</sup>) of a zirconium component (please also see claim 19), and

and a 2<sup>nd</sup> layer comprising:

Art Unit: 1754

- 0.15 to 2 g/in<sup>3</sup> (259 to 3,456 g/ft<sup>3</sup>) of a 2<sup>nd</sup> support (which may be silica, alumina or titania: please also see claims 2 and 19);
- 0.003 to 0.6 g/in<sup>3</sup> (5.2 to 1,037 g/ft<sup>3</sup>) of a 2<sup>nd</sup> palladium component (please also see claim 19);
- 0 to 0.065 g/in<sup>3</sup> (0 to 112 g/ft<sup>3</sup>) of a 2<sup>nd</sup> platinum group metal component (please also see claim 19);
- 0.025 to 0.5 g/in<sup>3</sup> (43.2 to 864 g/ft<sup>3</sup>) of a 2<sup>nd</sup> alkaline earth metal component (which may be a component selected from the group consisting of Mg, Ba, Ca and St: please also see claims 13 and 19), *which corresponds to the "SOx sorbent component" of at least Applicant's independent claim 1: please compare the MgO of at least Applicant's claim 9 to the same Mg compound set forth in claim 13 in U. S. Pat. 5,597,771, and also note that the paragraph bridging pgs. 26 and 27 in U. S. Pat. 5,597,771 reports that the alkaline earth metal components are preferably alkaline earth metal **oxides***;
- 0.025 to 0.5 g/in<sup>3</sup> (43.2 to 864 g/ft<sup>3</sup>) of a 2<sup>nd</sup> rare earth metal component selected from lanthanum metal components and neodymium metal components (please also see claim 19), and
- 0.025 to 0.5 g/in<sup>3</sup> (43.2 to 864 g/ft<sup>3</sup>) of a zirconium metal component (please also see claim 19).

Also, note that claim 80 in U. S. Pat. 5,597,771 reports that the 1<sup>st</sup> layer is on a downstream substrate and that the 2<sup>nd</sup> layer is on an upstream substrate.

The difference between the Applicants' claims and U. S. Pat. 5,597,771 is that the Applicants' claims 7-9 define the "SOx sorbent" of independent claim 1 as possibly being magnesium or barium **oxide**, whereas claim 13 in U. S. Pat. 5,597,771 reports that alkaline earth metal component may be a **component** of magnesium or barium.

The paragraph bridging pgs. 26 and 27 in U. S. Pat. 5,597,771 reports that alkaline earth metal components are preferably alkaline earth metal oxides.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to selectively use either magnesium oxide or barium oxide as the "2<sup>nd</sup> alkaline earth metal component" reported in abstract of U. S. Pat. 5,597,771, in the manner that would arrive at the "SOx sorbent component" of at least the Applicants' independent claim 1, because the paragraph bridging pgs. 26 and 27 in U. S. Pat. 5,597,771 discloses that the alkaline earth metal components are, preferably, alkaline earth metal oxides. Since no actual distinction is seen or has been shown between the "SOx sorbent component" of the Applicants' claims and the "2<sup>nd</sup> alkaline earth metal component" of U. S. Pat. 5,597,771, then the claims are rejected under 35USC102 - as well as 35USC103.

Note that the 2<sup>nd</sup> alkaline earth metal component (i. e. the Applicant's "SOx sorbent component") will inherently have the same claimed "free energy of formation".

Also, note that "Example 6" on pg. 36 (which refers back to Example 4 on pg. 35) in U. S. Pat. 5,597,771 reports what appears to be the same method for preparing the catalyst, comprising:



Art Unit: 1754

impregnating alumina powder with a an aqueous solution comprising platinum to form a wash coat slurry;

dipping a cordierite monolith into this wash coat slurry , and

calcining this dipped, cordierite monolith to produce a 1<sup>st</sup> coat comprising Pt supported on alumina;

impregnating another batch of alumina with an aqueous solution comprising barium oxide to form a 2<sup>nd</sup> wash coat slurry;

dipping the cordierite monolith containing Pt on alumina into this 2<sup>nd</sup> wash coat slurry, and

calcining the resulting monolith to obtain a monolith comprising a 1<sup>st</sup> layer comprising alumina supporting platinum and a 2<sup>nd</sup> layer comprising alumina supporting barium oxide, in a manner that is not seen to be unobviously distinct from the limitations of Applicants' claims 106 and 109.

Claims 60, 62 and 63 have not been rejected under either 35USC102 or 35USC103 because there is nothing in U. S. Pat. 5,597,771 teaching or suggesting that a top layer comprising supported  $\text{MgAl}_2\text{O}_4$  be provided over the bottom layer (i. e. the 1<sup>st</sup> layer) and middle layer (i. e. the 2<sup>nd</sup> layer).

The following references, which are indicative of the state of the art, are made of record:

U. S. Pat. 6,432,859 B1 disclosing a layered catalyst;

Art Unit: 1754

U. S. Pat. 6,248,688 B1 disclosing a catalyst containing oxygen storage components;

U. S. Pat. 6,221,804 B1 disclosing a layered catalyst;

U. S. Pat. 6,066,587 disclosing a layered catalyst, and

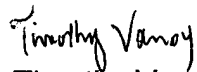
U. S. Pat. 6,025,297 disclosing a catalyst containing a NOx storage member.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 703-308-2540. The examiner can normally be reached on 8 hr. days.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Timothy Vanoy/tv  
January 7, 2003

  
Timothy Vanoy  
Patent Examiner

Art Unit 1754